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(54) Title: PROGRAMMABLE MODULATION INDEX FOR TRANSPONDER

(57) Abstract

A variable modulation index for a transponder (102, 200, 400) capable of measuring one or more parameters (e.g., temperature, pressure) in an object (e.g., a tire, (104)) and transmitting a data stream (Figures 3C, 4B) to an external reader/interrogator (106). The transponder typically operates in a passive mode, deriving its power (V_{xx}, V_{cc}, V_{dd}) from an RF interrogation signal received by an antenna system (210, 410, 710), but can also operate in a battery-powered active mode. The transponder includes memory (238, 438) for storing measurements, calibration data, programmable trim settings (436b), transponder ID and the like. Data stream transmission is preferably accomplished by PSK modulation (700) of the received RF signal, wherein the magnitude of modulation (index) is programmably varied in binary steps according to the programmed trim settings, and dynamically varied according to the level of input power in order to optimize the transmission. The transmitted signal is cleaned of noise by synchronizing a clock signal with the data stream signal.

